I CLAIM:

1. A sensor system, comprising:

an AlN substrate,

a W layer on said substrate,

a signal source adapted to apply an electrical actuating signal to said W layer, and

a sensor adapted to sense the response of said W layer to said actuating signal.

2. The system of claim 1, said W layer comprising a thin film.

3. The system of claim 1, further comprising an oxidation resistant protective layer on said W layer.

4. The system of claim 3, said protective layer comprising gold.

5. The system of claim 3, said protective layer comprising B_2O_3-SiO_2.

6. The system of claim 3, said protective layer comprising an Au-Pt alloy.

7. The system of claim 6, said protective layer further comprising W on said Au-Pt alloy.

8. The system of claim 6, said protective layer further comprising B_2O_3-SiO_2 on said Au-Pt alloy.

9. The system of claim 3, said protective layer comprising Pt.

10. The system of claim 9, said protective layer further comprising B_2O_3-SiO_2 on said Pt.

11. The system of claim 3, further comprising an AlN cap on said protective layer.

12. The system of claim 1, said W layer comprising a plurality of conductive strands distributed on said substrate.

13. The system of claim 12, wherein said strands are generally parallel and serpentine shaped.

14. The system of claim 13, wherein said substrate is rectangular.

15. The system of claim 12, wherein said substrate is circular, and said strands extend along respective lines of longitude that merge at opposite poles of said substrate.

16. The system of claim 1, implemented as a temperature sensor, wherein said signal source applies a non-heating electrical signal to said W layer, and said sensor senses the response of said W layer to said actuating signal as an indication of the temperature in the vicinity of said sensor.

17. The system of claim 1, wherein said signal source applies a signal to heat said W layer.

18. The system of claim 17, wherein said sensor senses a response of said W layer indicative of its temperature.

19. The system of claim 18, further comprising an additional AlN substrate with an additional W layer thereon, said signal source connected to apply a substantially non-heating electrical signal to said additional W layer, and a sensor connected to sense a response of said additional W layer as an indication of its temperature,

said additional substrate and W layer disposed downstream of said substrate and conductive layer in a fluid flow path, with the difference in temperature between said W and additional W layers corresponding to the fluid flow rate.

20. The system of claim 1, said substrate and W layer disposed in a fluid flow path, said signal source being controllable to apply an actuating signal which heats said W layer, with said response sensed by said sensor corresponding to a fluid flow rate along said path.

21. The system of claim 1, said substrate and W layer being alternately immersed in and cleared from a predetermined fluid, the response sensed by said sensor indicating whether said substrate and W layer are in said fluid.

22. The system of claim 1, wherein said substrate and W layer are disposed in a variable pressure environment, said sensor sensing the response of said W layer as an indication of the pressure in said environment.

23. The system of claim 1, wherein said substrate and W layer are disposed in an environment in which the W layer is subject to alteration from said environment

which changes its response to a given actuating signal, wherein the relationship between said actuating signal and said response is indicative of the chemical nature of said environment.

24. A system, comprising:

an AlN substrate,

a conductive layer on said substrate which, over a predetermined temperature operating range, has an expansion coefficient within 1.00+/-0.07 of said substrate, is substantially non-reactive with said substrate, and exhibits substantially no solid-solubility or interdiffusivity with said substrate,

a signal source adapted to apply an electrical actuating signal to said conductive layer, and

a sensor adapted to sense the response of said conductive layer to said actuating signal.

25. The system of claim 24, said conductive layer comprising a thin film.

26. The system of claim 24, further comprising an oxidation resistant protective layer on said conductive layer.

27. The system of claim 26, further comprising an AlN cap on said protective layer.

28. The system of claim 24, said conductive layer comprising a plurality of conductive strands distributed on said substrate.

29. The system of claim 28, wherein said strands are generally parallel and serpentine shaped.

30. The system of claim 29, wherein said substrate is rectangular.

31. The system of claim 28, wherein said substrate is circular, and said strands extend along respective lines of longitude that merge at opposite poles of said substrate.

32. The system of claim 24, implemented as a temperature sensor, wherein said signal source applies a non-heating electrical signal to said W layer, and said sensor senses the response of said W layer to said actuating signal as an indication of the temperature in the vicinity of said sensor.

33. The system of claim 24, wherein said signal source applies a signal to heat said conductive layer.

34. The system of claim 33, wherein said sensor senses a response of said conductive layer indicative of its temperature.

35. The system of claim 34, further comprising an additional AlN substrate with an additional conductive layer thereon, said signal source connected to apply a substantially non-heating electrical signal to said additional conductive layer, and a sensor connected to sense a response of said additional conductive layer as an indication of its temperature,

said additional substrate and conductive layer disposed downstream of said substrate and conductive layer in a fluid flow path, with the difference in tem-

perature between said conductive layer and additional conductive layer corresponding to the fluid flow rate.

36. The system of claim 24, said substrate and conductive layer disposed in a fluid flow path, said signal source being controllable to apply an actuating signal which heats said conductive layer, with said response sensed by said sensor corresponding to a fluid flow rate along said path.

37. The system of claim 24, said substrate and conductive layer being alternately immersed in and cleared from a predetermined fluid, the response sensed by said sensor indicating whether said substrate and conductive layer are in said fluid.

38. The system of claim 24, wherein said substrate and conductive layer are disposed in a variable pressure environment, said sensor sensing the response of said conductive layer as an indication of the pressure in said environment.

39. The system of claim 24, wherein said substrate and conductive layer are disposed in an environment in which the conductive layer is subject to alteration from said environment which changes its response to a given actuating signal, wherein the relationship between said actuating signal and response is indicative of the chemical nature of said environment.

40. A sensor system, comprising:

an insulative substrate,

a W conductive layer on said substrate which, over a predetermined temperature operating range, has an

expansion coefficient within 1.00+/-0.07 of said substrate, is substantially non-reactive with said substrate, and exhibits substantially no solid-solubility or interdiffusivity with said substrate,

a signal source adapted to apply an electrical actuating signal to said W layer, and

a sensor adapted to sense the response of said conductive layer to said actuating signal.

41. The system of claim 40, said W layer comprising a thin film.

42. The system of claim 40, further comprising an oxidation resistant protective layer on said conductive layer to inhibit oxidation of said conductive layer.

43. The system of claim 42, further comprising an AlN cap on said protective layer.

44. The system of claim 40, said conductive layer comprising a plurality of conductive strands distributed on said substrate.

45. The system of claim 44, wherein said strands are generally parallel and serpentine shaped.

46. The system of claim 45, wherein said substrate is rectangular.

47. The system of claim 44, wherein said substrate is circular, and said strands extend along respective lines of longitude that merge at opposite poles of said substrate.

48. The system of claim 42, implemented as a temperature sensor, wherein said signal source applies a non-heating electrical signal to said W layer, and said sensor senses the response of said W layer to said actuating signal as an indication of the temperature in the vicinity of said sensor.

49. The system of claim 40, wherein said signal source applies a signal to heat said conductive layer.

50. The system of claim 49, wherein said sensor senses a response of said conductive layer indicative of its temperature.

51. The system of claim 50, further comprising an additional insulative substrate with an additional W conductive layer thereon, said signal source connected to apply a substantially non-heating electrical signal to said additional conductive layer, and a sensor connected to sense a response of said additional conductive layer as an indication of its temperature,

said additional substrate and conductive layer disposed downstream of said substrate and conductive layer in a fluid flow path, with the difference in temperature between said conductive layer and additional conductive layer corresponding to the fluid flow rate.

52. The system of claim 40, said substrate and conductive layer disposed in a fluid flow path, said signal source being controllable to apply an actuating signal which heats said conductive layer, with said response sensed by said sensor corresponding to a fluid flow rate along said path.

53. The system of claim 40, said substrate and conductive layer being alternately immersed in and cleared from a predetermined fluid, the response sensed by said sensor indicating whether said substrate and conductive layer are in said fluid.

54. The system of claim 40, wherein said substrate and conductive layer are disposed in a variable pressure environment, said sensor sensing the response of said conductive layer as an indication of the pressure in said environment.

55. The system of claim 40, wherein said substrate and conductive layer are disposed in an environment in which the conductive layer is subject to alteration from said environment which changes its response to a given actuating signal current, wherein the relationship between said actuating signal and response is indicative of the chemical nature of said environment.

56. An electrical circuit element, comprising:
an AlN substrate, and
a W thin film layer on said substrate.

57. The circuit element of claim 56, said W layer comprising a plurality of conductive strands distributed on said substrate.

58. The circuit element of claim 57, wherein said substrate is rectangular.

59. The circuit element of claim 58, wherein said strands are generally parallel and serpentine shaped.

60. The circuit element of claim 57, wherein said substrate is circular, and said strands extend along respective lines of longitude that merge at opposite poles of said substrate.

61. A sensing method, comprising:

applying an electrical actuating signal to a W layer on an AlN substrate, and

sensing the response of said W layer to said actuating signal.

62. The method of claim 61, wherein a non-heating actuating signal is applied to said W layer, and its response is sensed as an indication of the temperature in the vicinity of said sensor.

63. The method of claim 61, wherein said actuating signal heats said W layer.

64. The method of claim 63, wherein the temperature of said W layer is sensed.

65. The method of claim 64, further comprising applying a non-heating electrical signal to an additional W on an additional AlN substrate disposed downstream of said W layer and substrate in a fluid flow path, and sensing a response of said additional W layer as an indication of its temperature, the difference in temperature between said W and additional W layers corresponding to the fluid flow rate.

66. The method of claim 61, said substrate and W layer disposed in a fluid flow path, wherein said actuat-

ing signal heats said W layer, and the temperature of said W layer is sensed as an indication of the fluid flow rate along said path.

67. The method of claim 61, further comprising alternately immersing said substrate and W layer in and clearing them from a predetermined fluid, wherein the temperature of said W layer is sensed as an indication of whether it is in said fluid.

68. The method of claim 61, wherein said substrate and W layer are disposed in a variable pressure environment, and the response of said W layer is sensed as an indication of the pressure in said environment.

69. The method of claim 61, wherein said substrate and W layer are disposed in an environment in which the W layer is subject to alteration from said environment which changes its response to a given actuating signal, and the sensed response of said W layer is compared to said actuating signal to obtain an indication of the chemical nature of said environment.